In the claims:

1. (Currently Amended) A Mmethod for the plasma-based generation of X-radiation, with the steps:

~~provision of~~ providing a target material ~~(50)~~ in the form of a free flow structural formation ~~(51)~~ in a vacuum chamber ~~(20), and irradiation of the target material (50) in order to produce a plasma condition in which the X-radiation is radiated therefrom~~,

~~characterized, in that~~ wherein the flow structural formation ~~(51)~~ is formed in such a way that the target material, at least at a location of irradiation, has a surface ~~(52)~~ with a local curvature minimum, and irradiating the target material in order to produce a plasma condition in which the X-radiation is radiated therefrom.

2. (Currently Amended) The Mmethod according to Cclaim 1 in which the flow structural formation ~~(51)~~ has, at least at the location of the irradiation, a cross-sectional surface having in a main axis direction (y) a longitudinal expansion Δy that is larger than a transverse expansion Δx in an auxiliary axis direction (x) deviating from the main axis direction (y).

3. (Currently Amended) The Mmethod according to Cclaim 2 in which the flow structural formation ~~(51)~~ has, at least at the location of the irradiation, an oval cross-sectional surface or a rounded-off, rectangular cross-sectional surface.

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4. (Currently Amended) The ~~M~~method according to ~~Claims~~ claim 2 ~~or 3~~ in which the flow structural formation ~~(51)~~ forms, at least at the location of the irradiation, a free lamella-type sheet.

5. (Currently Amended) The ~~M~~method according to ~~Claims 3 or 4~~ claim 2 in which the flow structural formation ~~(51)~~ has, at least at the location of the irradiation, a concave surface at least on one side.

6. (Currently Amended) The ~~M~~method according to ~~at least one of the preceding Claims~~ claim 1 where the flow structural formation ~~(51)~~ of the target material is produced with a target source which has a nozzle with a non-circular outlet opening ~~(14)~~.

7. (Currently Amended) The ~~M~~method according to ~~C~~claim 6 where the flow structural formation ~~(51)~~ of the target material is produced with a dispenser which has a nozzle with a slot-shaped outlet opening ~~(14)~~.

8. (Currently Amended) The ~~M~~method according to ~~Claims~~ claim 6 ~~or 7~~ where the nozzle for setting a predetermined alignment relative to the direction of the irradiation of the target material ~~(50)~~ is rotated.

9. (Currently Amended) The ~~M~~method according to ~~at least one of the preceding Claims 1 to 4~~ claim 1 in which the flow structural formation ~~(51)~~ of the target material is produced with two primary jets which are led together for the formation of a free self-supporting liquid sheet at a predetermined angle.

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10. (Currently Amended) The ~~M~~method according to ~~C~~claim 9 in which the primary jets are led together at an angle that is smaller than or equal to 180°.

11. (Currently Amended) The ~~M~~method according to ~~C~~claim 9 in which the primary jets are led together at an angle that is smaller than or equal to 90°.

12. (Currently Amended) The ~~M~~method according to ~~at least one of the preceding Claims~~ claim 1 in which the flow structural formation ~~(51)~~ of the target material is irradiated essentially perpendicular onto the surface ~~(52)~~ with the local curvature minimum.

13. (Currently Amended) The ~~M~~method according to ~~at least one of the preceding Claims~~ claim 1 in which ~~one of~~ the ~~following materials is used as~~ target material is selected from the group consisting of: at least one hydrocarbon compound comprising at least one polymer, which is liquid at ambient temperature, water, glycerine, alcohol, liquefied gas and ~~or~~ liquid metal.

14. (Currently Amended) The ~~M~~method according to ~~C~~claim 13 in which the hydrocarbon compound used as target material has at least one ether binding between carbon atoms.

15. (Currently Amended) The ~~M~~method according to ~~C~~claim 14 in which the hydrocarbon compound used as target material has at least one partially fluorinated or perfluorinated polymer hydrocarbon ether.

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16. (Currently Amended) The ~~M~~method according to ~~C~~claim 15 in which the hydrocarbon compound used as a target material has a perfluoropolyether or a mixture of perfluoropolyethers.

17. (Currently Amended) The ~~M~~method according to ~~at least one of the Claims 13 to 16~~ claim 13 in which the hydrocarbon compound used as target material has a vapor pressure at ambient temperature less than 10 mbar, a molecular weight larger than 100 g/mol and/or a viscosity in the range of 1 cS to 1800 cS.

18. (Currently Amended) The ~~M~~method according to ~~one of the preceding Claims 13 to 17,~~ claim 13, in which the irradiation of the target material ~~(50)~~ takes place in a vacuum chamber ~~(20)~~ which is at least locally heated in such a way that the vapor pressure of the target material ~~(50)~~ is higher than the pressure of the gas, which is released by the irradiation of the target material ~~(50)~~.

19. (Currently Amended) The ~~M~~method according to ~~one of the preceding Claims~~ claim 13 ~~to 18~~ in which target material ~~(50)~~, after irradiation, is collected in a collection ~~device (40)~~ equipment at ambient temperature.

20. (Currently Amended) ~~Usage~~ A method of using polymer hydrocarbon compounds, which are liquid at ambient pressure, for the provision of target material in the form of a flow structural formation ~~(51)~~, the target material having, at least at the location of a irradiation for the generation of soft X-radiation, a surface with a local curvature minimum.

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21. (Currently Amended) ~~Usage~~ A method of using partially fluorinated or perfluorinated polymer hydrocarbon ethers for the provision of target material in the form of a flow structural formation ~~(51)~~, the target material having, at least at the location of a irradiation for the generation of soft X-radiation, a surface with a local curvature minimum.

22. (Currently Amended) An X-ray source for plasma-based generation of X-radiation by means of high-energetic irradiation of a target material ~~(50)~~ in the form of a free flow structural formation ~~(51)~~, comprising:
- a target source ~~(10)~~ that provides the target material ~~(50)~~ in a vacuum chamber ~~(20)~~, and
~~- an irradiation device (30) for irradiation the target material (50) in the vacuum chamber,~~
~~characterized, in that~~ - wherein the target source is adapted for forming the target material in such a way that the target material in the flow structural formation ~~(51)~~ has, at least at the location of the irradiation, a surface with a local curvature minimum, and
- an irradiation equipment for irradiation the target material in the vacuum chamber.

23. (Currently Amended) The X-ray source according to ~~c~~claim 22 in which the target source has a nozzle ~~(13)~~ with a non-circular outlet opening ~~(14)~~.

24. (Currently Amended) The X-ray source according to ~~c~~claim 23 in which the target source has a nozzle ~~(13)~~ with a slot-shaped outlet opening ~~(14)~~.

25. (Currently Amended) <u>The</u> X-ray source according to ~~C~~<u>c</u>laim 24 in which the target source has a nozzle ~~(13)~~ with an outlet opening ~~(14)~~ which is elliptic, rectangular, or convex and tapered towards the inside.

26. (Currently Amended) <u>The</u> X-ray source according to ~~C~~<u>c</u>laim 24 in which the nozzle ~~(13)~~ has an outlet opening ~~(14)~~ with a nozzle slot ~~(14a)~~ and a conical opening ~~(14b)~~.

27. (Currently Amended) <u>The</u> X-ray source according to ~~at least one of the Claims~~ <u>claim</u> 23 ~~to 26~~ in which the nozzle ~~(13)~~ in the vacuum chamber ~~(20)~~ is arranged in a rotary manner.

28. (Currently Amended) <u>The</u> X-ray source according to ~~C~~<u>c</u>laim 22 in which the target source has two nozzles ~~(15, 16)~~ for the production of primary jets, which are led together for the formation of a free self-supporting liquid sheet ~~(51)~~ at a predetermined angle.

29. (Currently Amended) <u>The</u> X-ray source according to ~~C~~<u>c</u>laim 28 in which the nozzles ~~(15, 16)~~ are aligned in such a way that the primary jets are led together at an angle of 180°.

30. (Currently Amended) <u>The</u> X-ray source according to ~~C~~<u>c</u>laim 28 in which the nozzles ~~(15, 16)~~ are aligned in such a way that the primary jets are led together at an angle that is smaller than or equal to 90°.

31. (Currently Amended) <u>The</u> X-ray source according to ~~at least one of the Claims~~ <u>claim</u> 22 ~~to 30~~ in which at least

one heating ~~device (60)~~ equipment is ~~provided~~ envisaged with which at least parts of the vacuum chamber ~~(20)~~ can be tempered.

32.(Currently Amended) The X-ray source according to ~~C~~claim 31 in which the heating ~~device (60)~~ equipment comprises several thermostats ~~(61-64)~~, which are connected with components at and~~/or~~ in the vacuum chamber ~~(20)~~.

33.(Currently Amended) The X-ray source according to ~~C~~claim 32 in which the irradiation ~~device~~ equipment has an irradiation optical system, which is arranged in the vacuum chamber ~~(20)~~ and is connected to a thermostat ~~(63)~~.

34.(Currently Amended) The X-ray source according to ~~at least one of the Claims~~ claim 22 ~~to 32~~ in which the irradiation ~~device~~ equipment has an irradiation optical system which is arranged outside of the vacuum chamber ~~(20)~~.

35.(Currently Amended) The X-ray source according to ~~at least one of the~~ ~~C~~claims 22 ~~to 34~~ in which a collection ~~device (40)~~ equipment is ~~provided~~ envisaged for collecting the target material ~~(50)~~ after irradiation and is set up for the coolant-free operation.

36.(Currently Amended) The X-ray source according to ~~at least one of the Claims~~ claim 22 ~~to 35~~ in which an X-ray lithography device ~~(70)~~ is arranged in the vacuum chamber ~~(20)~~.

37.(Currently Amended) The X-ray source according to ~~C~~claim 36, in which the X-ray lithography device ~~(70)~~ is connected with a thermostat ~~(64)~~.

38.(Currently Amended) The X-ray source according to ~~at least one of the Claims 22 to 37,~~ claim 22, in which the vacuum chamber ~~(20)~~ is joined to a processing chamber ~~(26)~~ in which an X-ray lithography device ~~(70)~~ is arranged.

39.(Currently Amended) A ~~V~~vacuum chamber with a nozzle ~~(13)~~ with a slot-shaped outlet opening ~~(14)~~ for injecting liquid target material into the vacuum chamber.

40.(Currently Amended) The ~~V~~vacuum chamber according to ~~C~~claim 39 in which the nozzle ~~(13)~~ is arranged in a rotating manner around an axis that runs parallel to the direction of the injection of the liquid target material.

41.(Currently Amended) A ~~M~~method for the injection of a liquid target material ~~(50)~~ in the form of a free flow structural formation ~~(51)~~ into a vacuum chamber ~~(20)~~, comprising the step of:
~~characterized, in that~~
forming the flow structural formation ~~(51) is formed in~~ such ~~a way~~ that the target material has a surface ~~(52)~~ with a local curvature minimum.

42.(Currently Amended) The ~~M~~method according to ~~C~~claim 41 in which the flow structural formation ~~(51)~~ forms a free, lamella-shaped sheet.

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43.(Currently Amended) The ~~M~~method according to ~~C~~claim 41 ~~or 42~~ in which the flow structural formation ~~(51)~~ has a concave surface ~~(52)~~ at least on one side.